

ABSTRACT

An electron emission device comprising an electron emission element (1) having a lower electrode (2), an upper electrode (5) consisting of a thin film, the surface of the upper electrode (5) being exposed to external space, and a semiconductor layer (4) formed between the lower electrode and the upper electrode, a counter electrode (21) provided to face the upper electrode (5) across the external space, a fine particle charging voltage control unit (22) for applying a voltage that charges fine particles deposited on the surface of the upper electrode (5) to between the upper electrode (5) and the lower electrode (2), and flying voltage control unit (23) for applying a voltage that sends charged fine particles flying from the surface of the upper electrode (5) to between the upper electrode (5) and the counter electrode (21), wherein the fine particle charging voltage control unit is operated to charge deposited fine particles, and the flying voltage control unit is operated to sent charged fine particles flying toward the counter electrode (21).